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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte M. MIZANUR RAHMAN

Appeal 2008-5122
Application 10/615,081
Technology Center 2800

Decided: December 4, 2008

Before PETER F. KRATZ, KAREN M. HASTINGS, and
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-12, 22-30, and 32-38. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM-IN-PART.

Appellant claims an implantable medical device with a folded monopole radio frequency (RF) antenna.

Representative claims 1, 22, 24, and 33 read as follows (italics added to highlight limitations in dispute):

1. An RF telemetry antenna system for communications between an external programmer and a implantable medical device, said system comprising:

an implantable medical device housing including a conductive, metal housing portion defining an internal volume and a dielectric housing portion defining an internal volume;

an internal transmitter/receiver circuit having a *ground reference located within the metal housing portion that is connected to the metal housing portion* such that the metal housing portion acts as a ground plane;

wherein the monopole RF antenna has an elongate form which is folded at least once and conformed inside the internal volume defined by the dielectric housing portion, and

wherein the connection end of the antenna is connected to the internal transmitter/receiver circuit.

22. An implantable medical device, comprising:
a housing having a dielectric portion defining an internal volume and a metal portion defining an internal volume;
a transmitter/receiver circuit located within the housing; and
an elongate monopole RF antenna, with a connection end, a free end and at least one fold between the connection end and the free end, operably connected to the transmitter/receiver circuit and positioned entirely within the dielectric portion internal volume such that the free end is closer to the connection end than the at least one fold.

24. An implantable medical device, comprising;

a housing having a dielectric portion, defining an internal volume and including a curved region, and a metal portion defining an internal volume;

a transmitter/receiver circuit located within the housing; and
an elongate monopole RF antenna, with *at least one fold and first and second arcuate portions that extend along the curved region in first and second planes that are substantially parallel to one another*, operably connected to the transmitter/receiver circuit and positioned entirely within the dielectric portion internal volume.

33. An implantable medical device, comprising:
a housing having a dielectric portion defining an internal volume and a metal portion defining an internal volume;
a transmitter/receiver circuit, located within the housing, *including a ground reference connected to the metal portion of the housing*;
a tissue stimulation circuit located within the housing; and
an elongate antenna with at least one folded portion operably connected to the transmitter/receiver circuit and positioned within the dielectric portion *such that transmissions from the at least one folded portion are receivable outside the dielectric portion*.

The prior art set forth below is applied by the Examiner in the § 103 rejections before us as evidence of unpatentability:

Villaseca	6,240,317 B1	May 29, 2001
Amundson	6,456,256 B1	Sep. 24, 2002

Claims 1-12, 22-28, 30, and 32-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Villaseca.

Claim 29 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Villaseca and Amundson.

Within the first ground of rejection, Appellant has separately argued each independent claim 1, 22, 24, and 33. Appellant has not separately argued any dependent claims with any reasonable degree of specificity. (Br. 8-13). Thus, in accordance with 37 C.F.R. § 41.37(c)(1)(vii), we select claims 1, 22, 24 and 33 as representative for this ground of rejection. Appellant presents no additional arguments, to those presented for the first ground of rejection, for the second ground of rejection of claim 29 which depends from independent claim 22.

ISSUES

The Examiner relies on Villaseca to teach or suggest all the elements in each of the four independent claims. Appellant contends that the respective disputed claim language (shown in *italics* above) of each of independent claims 1, 22, 24, and 33 is not taught or suggested by Villaseca. Thus, the issues on appeal are:

Issue 1: Has Appellant shown that the Examiner reversibly erred in finding that “a ground reference located within the metal housing portion that is connected to the metal housing portion” as recited in claim 1 would have been “good engineering practice” to one of ordinary skill in the art?

Issue 2: Has Appellant shown that the Examiner reversibly erred in concluding that the particular geometry of the antenna as recited in claim 22 would have been obvious to one of ordinary skill in the art?

Issue 3: Has Appellant shown that the Examiner reversibly erred in finding that the particular geometry of the antenna as recited in claim 24 is

met by the shape of the antenna including the braided shield 124 of Villaseca?

Issue 4: Has Appellant shown that the Examiner reversibly erred in finding that the particular positioning of the antenna of Villaseca is “such that transmissions from the at least one folded portion are receivable outside the dielectric portion” as recited in claim 33?

We answer these questions in the negative for issue 1 (claim 1), but in the affirmative for issues 2-4 (claims 22, 24, and 33).

FINDINGS OF FACT

The following findings of fact are supported by a preponderance of the evidence. Additional findings of fact as necessary appear in the Analysis portion of the opinion.

1. Villaseca describes a RF telemetry antenna system for communication between an external programmer and an implantable medical device (see, e.g., Abstract).

2. Villaseca’s implantable medical device 120 has a housing portion 122 made of metal such as titanium, with a dielectric housing portion 138; each portion defines an internal volume (Fig. 7; col. 9, ll. 15-47)

3. Villaseca describes a self-resonating, monopole antenna 134/136 contained within the internal volume of the housing defined by the dielectric portion 138. The antenna has an elongate form, with a free end and a

connection end 126, folded at least once, which conforms inside of the housing portion 138 (Fig. 7; col. 9, ll. 15-47).

4. The antenna may take the form of a coaxial cable (e.g., col. 2, ll. 36-46; col. 9, ll. 37-41).

5. Appellant does not dispute the Examiner's finding that the connection end 126 has the shield 124 of the antenna connected to the conductive housing 122 defining a ground reference forming a ground plane as claimed.¹

6. The Examiner concludes that the skilled artisan would have found it obvious that the internal transceiver circuit is grounded to the housing, at least through the shield of the coaxial cable (Ans. 3).

7. The definition of "ground" includes "a conducting connection between an electric circuit or equipment and the earth or some other conducting body".²

8. Appellant does not dispute the Examiner's finding that "[i]t is known that there are two conductors between the antenna and transceiver. In this case there are coaxial conductors defining the feed line. A center conductor would be connected to the transceiver circuitry and the shield conductor is connected to the ground of the transceiver, as in a ground conductor etched on the printed circuit board of a transceiver." (Ans. 3-4).

¹ No Reply Brief was filed in response to the Examiner's Answer.

² "ground." Dictionary.com Unabridged (v 1.1). Random House, Inc. Dictionary.com <http://dictionary.reference.com/browse/ground>; *see also*, The Random House College Dictionary 583 (1973).

9. Appellant also does not dispute the Examiner's implicit finding that it was known in the art to have an internal ground in an implantable medical device; that is, Appellant did not dispute the Examiner's finding that "[i]n either case the connection [of the braided conductor shield of Villaseca to ground] is within the housing, either at the feed through or inside the housing near the transceiver circuitry. Such a ground connection would never be avoided, as recognized by the skilled artisan because of the required two conductor feed line from transceiver ground and circuitry." (Ans. 4).

PRINCIPLES OF LAW

The Examiner bears the initial burden, on review of prior art or on any other ground, of presenting a prima facie case of unpatentability. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

A claimed invention is not patentable if the subject matter of the claimed invention would have been obvious to a person having ordinary skill in the art. 35 U.S.C. § 103(a); *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).

It is a basic principle that the question under 35 U.S.C. § 103 is not merely what the references expressly teach but what they would have

suggested to one of ordinary skill in the art at the time the invention was made. See *Merck & Co. Inc., v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989).

Nor is it necessary that suggestion or motivation be found within the four corners of the references themselves. “The obviousness analysis cannot be confined by the formalistic conception of the words teaching, suggestion and motivation, or by overemphasis on the importance of . . . the explicit content of issued patents.” *KSR*, 127 S. Ct. at 1741. The Supreme Court also noted in *KSR* that an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.*

Consistent with *KSR*, the Federal Circuit recently recognized that “[a]n obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of a case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not.” *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (citing *KSR*, 127 S. Ct. 1727, 1739 (2007)). The Federal Circuit relied in part on the fact that Leapfrog had presented no evidence that the inclusion of a reader in the combined device was “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art.” *Id.* at 1162.

ANALYSIS

Issue 1

Claims 1-12 and 30

It is undisputed that Villaseca describes a system as set out in claim 1 except that Villaseca does not explicitly describe that the internal circuit of the implantable medical device has “a ground reference located within the metal housing portion that is connected to the metal housing portion” as recited in claim 1. The Examiner addresses this deficiency by finding that it is only “good engineering practice” to provide a ground for the internal circuitry and that it therefore would have been within the level of ordinary skill in the art to provide an internal ground reference as claimed (Ans. 3, 8).

Appellant contends that the Examiner’s rejection is “devoid of any support” for the assertion that one would have been motivated to connect an internal ground to the housing of Villaseca’s implantable medical device (Br. 8), and is based on nothing more than “mere conclusory statements” (Br. 10).

We do not agree. The Examiner has made numerous findings in support of the obviousness conclusion that are undisputed by the Appellant.³ (Ans. 3, 4, 6-8). Specifically, for example only, the Examiner found it was no more than “good engineering practice” to provide a ground for the internal circuit of Villaseca (Ans. 8). The Examiner found that the connection of the braided shield 124 to the housing 122 provides a ground (Ans. 3). The Examiner also found that since the coaxial cable antenna shield passes through the connection 126, “then there is an internally

³ As previously noted, no Reply Brief was filed by Appellant.

connected ground reference within the metal housing” as claimed (Ans. 7, see also Ans. 8 (“[t]he internal ground reference is the continuation of the shield within the housing and connecting the ground of the transceiver.”)).

Furthermore, as the Supreme Court recently stated, a person of ordinary skill is also a person of ordinary creativity, not an automaton. *KSR*, 127 S. Ct. at 1742. One of ordinary skill in the art is presumed to have skills apart from what the prior art references expressly disclose. See *In re Sovish*, 769 F.2d 738, 742 (Fed. Cir. 1985).

We have no doubt that one of ordinary skill in the art would have readily appreciated that providing an internal ground reference as claimed would have been *prima facie* obvious to one of ordinary skill in the art as “good engineering practice” as established by the Examiner. The improvement of providing an internal ground reference as claimed appears to be no more than the predictable use of a way to accomplish the known established function of grounding an electrical circuit. *KSR*, 127 S. Ct. at 1740. Appellant has not contended that it would take more than ordinary creativity to provide an internal ground reference as claimed. See, e.g., *Leapfrog*, 485 F.3d at 1162.

We therefore determine that Appellant has not shown that the Examiner erred in establishing a *prima facie* case of obviousness for claim 1. Since dependent claims 2-12 and 30 were not separately argued, they fall with independent claim 1.

Issue 2

Claims 22, 23, 25-29 and 32

The geometry of the antenna recited in independent claim 22 is not explicitly shown in Villaseca; that is, it is undisputed that Villaseca does not specifically show the free end of the antenna closer to the connection end than the fold as recited in claim 22.

The Examiner's position is that a skilled artisan would have found it obvious to extend the free end of the antenna around the housing in the same manner as the first fold so that the free end of the antenna closer to the connection end, particularly when a lower frequency is employed. The Examiner contends that evidence of obviousness, for changing antenna length, arrangement and geometry, lies within the various embodiments of Villaseca (Ans. 9).

Appellant contends that the Examiner has not provided any reasoning why one of ordinary skill in the art would have been led to the particular configuration recited in claim 22 (Br. 9-10).

The fundamental deficiency of the Examiner's reasoning is that the Examiner has not clearly articulated any reason why an artisan would have made such a modification to the antenna which already is contained within the dielectric housing portion 138 of Villaseca (Fig. 7). All other embodiments of Villaseca show antennas that are not configured as claimed, nor contained within the dielectric portion of the housing as required by Appellant's claim 22.

Nor is there any evidence or rationale provided by the Examiner that the claimed relationship would not necessarily result in differences in

performance over the prior art product. Indeed, the Examiner states that the radiation beam pattern, impedance match, and other characteristics of the antenna would change (Ans. 4-5).

The additional reference of Amundson for the rejection of dependent claim 29 does not cure the deficiencies of Villaseca.

We, therefore, determine that the evidence presented by the Examiner falls short of supporting a prima facie case of obviousness. We are constrained by these circumstances to reverse the § 103 rejection of claims 22, 23, 25-28 and 32, as well as the § 103 rejection of dependent claim 29.

Issue 3

Claim 24

The geometry of the antenna as recited in independent claim 24 is not explicitly shown in Villaseca.

Claim 24 requires an “antenna, with at least one fold and first and second arcuate portions that extend along the curved region” of the housing “in first and second planes that are substantially parallel to one another”.

It is well established that the scope of the claims in patent applications is interpreted not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

The Examiner’s position is that the braided shield 124 reads on the claimed first arcuate portion and the center antenna conductor 134 reads on

the claimed second arcuate portion (Ans. 10). Appellant argues this is an unreasonable interpretation of the disputed claimed language (Br. 10, 11).

We find that reading the configuration of Villaseca's antenna on the recited claim language is unreasonably broad, as it is not consistent with Appellant's Specification, nor is it consistent with the interpretation that those skilled in the art would reach. As can be readily seen in Appellant's Figs. 1, 4 and 5, the antenna itself has a fold and first and second arcuate portions in first and second planes that are substantially parallel to one another (see, e.g., Spec. 9, ¶ [0038]). It is unreasonable to read the braided shield of Villaseca as one portion of the antenna and the center conductor (i.e., the antenna *per se*) as another portion of the antenna as the Examiner has done.

We therefore agree with Appellants that Villaseca does not teach or suggest an antenna as recited in claim 24, and that the Examiner has not provided any evidence of why such a configuration would have been *prima facie* obvious to one of ordinary skill in the art.

We, therefore, determine that the evidence presented by the Examiner falls short of supporting a *prima facie* case of obviousness. We are constrained by these circumstances to reverse the § 103 rejection of claim 24.

Issue 4

Claims 33-38

Appellant's arguments regarding "the ground reference connected to the metal portion of the housing" are unpersuasive for the same reasons we have set forth with respect to claim 1 above.

Appellant further contends that the antenna of Villaseca is **not** positioned "such that transmissions from the at least one folded portion are receivable outside the dielectric portion" of the housing as recited in independent claim 33 (Br. 13).

It is undisputed that the folded portion of the antenna of Villaseca is covered with a braided shield 124. As recognized by the Examiner, the shield 124 of Villaseca would shield the antenna (and its transmissions) along its length (Ans. 12). Notwithstanding this, however, the Examiner's position is that the shield 124 would "not prevent radiating currents from flowing thereon in opposite directions" along the inner conductor (i.e., the antenna) (Ans. 12).

Appellant contends that the purpose of the braided shield is to **prevent** electromagnetic energy from escaping the folded portion (Br. 13).

The Examiner's assertion that current would flow below the braided shield in opposite directions such that transmissions from the folded portion covered by the braid 124 would be receivable as claimed appears to be mere speculation unsupported by any evidence or convincing line of technical reasoning.

We, therefore, determine that the evidence presented by the Examiner falls short of supporting a prima facie case of obviousness. We are constrained by these circumstances to reverse the § 103 rejection of claims 33-38.

CONCLUSIONS

Appellant has not shown that the Examiner reversibly erred in finding that “a ground reference located within the metal housing portion that is connected to the metal housing portion” as recited in claim 1 would have been “good engineering practice” to one of ordinary skill in the art.

Appellant has shown that the Examiner erred in determining that claims 22, 24 and 33 were obvious over Villaseca, specifically;

Appellant has shown that the Examiner reversibly erred by not establishing with sufficient evidence that the particular geometry of the antenna as recited in claim 22 would have been obvious to one of ordinary skill in the art,

Appellant has shown that the Examiner reversibly erred in finding that the particular geometry of the antenna as recited in claim 24 is met by the shape of the antenna including the braided shield 124 of Villaseca, and,

Appellant has shown that the Examiner reversibly erred by not establishing with sufficient evidence that the particular positioning of the antenna of Villaseca is “such that transmissions from the at least one folded portion are receivable outside the dielectric portion” as recited in claim 33.

ORDER

The rejection of claims 1-12, and 30 under 35 U.S.C. § 103(a) as being unpatentable over Villaseca is affirmed.

The rejection of claims 22-28, and 32-38 under 35 U.S.C. § 103(a) as being unpatentable over Villaseca is reversed.

The rejection of claim 29 under 35 U.S.C. § 103(a) as being unpatentable over Villaseca and Amundson is reversed.

The decision of the Examiner is affirmed-in-part.

AFFIRMED-IN-PART

tc

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